

### REMARKS

Applicant thanks the Examiner for the attention accorded the present Application in the March 18, 2003 Office Action, in which claims 1-41 were pending. In that Action, claims 8-17 were withdrawn from consideration as being drawn to a non-elected invention; claims 1-7, 18-26 and 28-41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanno in view of Inagaki; and claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanno in view of Inagaki, and further in view of Cheadle.

Claims 1-7 and 18-41 are now currently pending in this Application. Based on the above amendments, Applicant respectfully submits that the rejections to claims 1-7 and 18-41 have been overcome. Reconsideration of this Application is respectfully requested in view of the following remarks.

#### 35 U.S.C. § 103(a) rejections

Claims 1-7, 18-26 and 28-41 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kanno in view of Inagaki et al. Claim 27 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kanno in view of Inagaki et al., and further in view of Cheadle. Applicant respectfully disagrees with the Examiner's conclusion and submits that the present invention is not obvious in view of, nor is it even suggested by, Kanno, Inagaki and/or Cheadle.

As presently claimed in Applicant's independent claims, Applicant's invention comprises "[a] creep resistant zirconium-based alloy for use in nuclear fuel cladding, wherein the zirconium-based alloy comprises a coarse grained lath alpha microstructure, and *wherein the zirconium-based alloy comprises a middle annular layer in the cladding disposed between an inner annular layer in the cladding and an outer annular layer in the cladding.*"<sup>1</sup>

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<sup>1</sup> Applicant's spec., independent claim 1 (emphasis added). See also Applicant's spec., independent claims 21 and 30, which are similar to claim 1.

In contrast, Kanno does not disclose a nuclear fuel cladding having three annular layers, wherein the middle annular layer comprises a zirconium-based alloy having a coarse grained lath alpha microstructure. Kanno discloses only a nuclear fuel cladding having three annular layers, wherein the middle annular layer comprises stainless steel or a copper-based alloy.<sup>2</sup> Therefore, Kanno does not anticipate, nor even suggest, a nuclear fuel cladding having three annular layers, wherein the middle annular layer comprises a zirconium-based alloy having a coarse grained lath alpha microstructure, as recited in independent claims 1, 21 and 30 of Applicant's invention.

Inagaki fails to cure the deficiencies of Kanno. Inagaki does not disclose a nuclear fuel cladding having three annular layers, wherein the middle annular layer comprises a zirconium-based alloy having a coarse grained lath alpha microstructure either. Inagaki's invention comprises "a nuclear fuel cladding tube made of a zirconium-based alloy."<sup>3</sup> Inagaki mentions only that "the nuclear fuel cladding tube of the invention is made of the zirconium-based alloy of the invention,"<sup>4</sup> and never mentions that these tubes could comprise annular layers of materials as claimed in Applicant's invention. Therefore, Inagaki does not disclose, nor even suggest, a nuclear fuel cladding having three annular layers, wherein the middle annular layer comprises a zirconium-based alloy having a coarse grained lath alpha microstructure, as recited in independent claims 1, 21 and 30 of Applicant's invention.

Cheadle fails to cure the deficiencies of Kanno and Inagaki. Cheadle does not disclose a nuclear fuel cladding having three annular layers, wherein the middle annular layer comprises a zirconium-based alloy having a coarse grained lath alpha microstructure either. Cheadle discloses "zirconium alloy tubes especially for use in nuclear applications."<sup>5</sup> Furthermore, Cheadle discloses that these tubes are extruded,<sup>6</sup> and never mentions that these tubes could comprise annular layers of materials as claimed in Applicants' invention. Thus, Cheadle does not disclose, nor even suggest, a nuclear fuel cladding having three annular layers, wherein the middle annular layer comprises a

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<sup>2</sup> Kanno, col. 4, lines 23, 30, and 59-61.

<sup>3</sup> Inagaki, independent claims 1, 3, 5 and 7.

<sup>4</sup> Inagaki, col. 5, lines 7-12.

<sup>5</sup> Cheadle, col. 1, lines 5-6.

<sup>6</sup> Cheadle, col. 1, lines 8-38; col. 3, lines 26-47; and claim 1.

zirconium-based alloy having a coarse grained lath alpha microstructure, as recited in independent claims 1, 21 and 30 of Applicant's invention.

The Examiner stated that "it would have been obvious to one of ordinary skill in the art to have made the nuclear fuel cladding of Kanno et al using the zirconium alloy of Inagaki et al as the middle layer because Inagaki et al teach ... that the alloy possessed good strength and good ductility, which properties satisfy the requirements of the intermediate layer of Kanno et al."<sup>7</sup> Applicant disagrees with the Examiner's conclusion, and points out that, "[w]hen applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined."

MPEP § 2141 (citing *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986) (emphasis added)). Applicant respectfully submits that there is no suggestion in any of the references cited by the Examiner that it would be desirable to modify or combine the references to produce Applicant's invention.

"The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." MPEP § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added)). Again, Applicant respectfully submits that there is no suggestion in any of the references cited by the Examiner that it would be desirable to combine the references to produce Applicant's invention. Therefore, it appears that the Examiner is basing this rejection only upon Applicant's disclosure.

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<sup>7</sup> Office Action, p. 3-4.

“The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” MPEP § 2143.01 (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis added)). “Although a prior art device ‘may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.’” MPEP § 2143.01 (citing *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (emphasis added)). Yet again, Applicant respectfully submits that there is no suggestion or motivation in any of the references cited by the Examiner that it would be desirable to combine the references to produce Applicant’s invention.

“It is immaterial to the issue, however, that all of the elements were old in other contexts. What must be found obvious to defeat the patent is the claimed combination.” *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437, 1448, 223 USPQ 603, 609-10 (Fed. Cir. 1984). “A statement that modifications of the prior art to meet the claimed invention would have been ‘well within the ordinary skill in the art at the time the claimed invention was made’ because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references.” MPEP § 2143.01 (citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993) (emphasis added)). Applicant respectfully submits that the Examiner has not established a prima facie case of obviousness in this matter because there is no suggestion in any of the references that the references could be combined to produce Applicant’s invention.

Since no suggestion to modify or combine the cited references to produce Applicant’s invention can be found within any of the cited references themselves, it appears that the Examiner is using improper hindsight reasoning, and Applicant’s disclosure, to find the present invention obvious. As this is not proper, Applicant submits

that these references cannot properly be combined and applied as a 35 U.S.C. § 103 rejection against the present invention.

Based on the above arguments and amendments, Applicant respectfully submits that independent claims 1, 21, 30 of the present invention are patentably distinguished from Kanno, Inagaki and Cheadle. As claims 2-7, 18-20 and 36-37 depend from claim 1, claims 22-29 and 38-39 depend from claim 21, and claims 31-35 and 40-41 depend from claim 30, the discussion above applies to these claims as well. Further, these claims each include separate novel features. Thus, Applicant respectfully requests allowance of pending claims 1-7, 18-26 and 28-41.

**CONCLUSION**

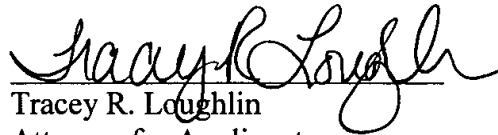
Applicants respectfully submit that the arguments presented above successfully traverse the rejections given by the Examiner in the Office Action. For the above reasons, it is respectfully submitted that the claims now pending patentably distinguish the present invention from the cited references. Allowance of pending claims 1-7 and 18-41 is therefore respectfully requested.

As this reply is being timely filed within two (2) months of the mailing date of the Office Action, Applicant believes that there is no fee due for this response. If this is incorrect however, the Commissioner is authorized to charge any additional fees that may be due, or credit any overpayment, to **Deposit Account No. 04-1448**.

Should the Examiner have any questions, or determine that any further action is necessary to place this Application into better form for allowance, the Examiner is encouraged to telephone the undersigned representative at the number listed below.

Respectfully submitted,

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